care for its observation. When a solution of nitrate of silver to which a little nitric acid had been added was used, there was still no sensible immediate action on the iron. When the solution was rendered very acid, then there was direct immediate action on the iron; it became covered with a coat of precipitated silver: the action then suddenly ceased, the silver was immediately redissolved, and the iron left perfectly clear, in the peculiar condition, and unable to cause any further precipitation of the silver from the solution. It is a remarkable thing in this experiment to see the silver rapidry dissolve away in a solution which cannot touch the iron, and to see the iron in a clean metallic state unable to precipitate the silver.

Iron and platina in an aqueous solution of nitrate of silver produce no electric current; both act as platina. When the solution is rendered a little acid by nitric acid, there is a very feeble current for a moment, the iron being as zinc. When still more acid is added so as to cause the iron to precipitate silver, there is a strong current whilst that action lasts, but when it ceases the current ceases, and then it is that the silver is redissolved. The association of the platina with the iron evidently helps much to stop the action.

When iron is associated with mercury, copper, lead, tin, zinc, and some other metals, in an aqueous solution of nitrate of silver, it produces a constant electric current, but always acts the part of *platinum.* This is perhaps most striking with mercury and copper, because of the marked contrast it affords to the effects produced in dilute sulphuric acid and most ordinary solutions. The constancy of the current even causes crystals of silver to form on the iron as the negative electrode. It might at first seem surprising that the power which tends to reduce silver on the iron negative electrode did not also bring-back the iron from its peculiar state, whether that be a state of oxidation or not. But it must be remembered that the moment a particle of silver is reduced on the iron, it not only tends to keep the iron in the peculiar state according to the facts before described, but also acts as the negative electrode; and there is no doubt that the current of

electricity which continues to circulate through the solution passes essentially between it and the silver, and not between it and the iron, the lattei metal being merely the conductor interposed between the silver and the copper extremities of the metallic arrangement.

I am afraid 3^011 will think I have pursued this matter to a greater length than it deserves; but I have been exceedingly